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ABSTRACT

Programed instructional techniques have been attacked as dehumanizing, dull, and restrictive. The possibility, however, that these deficiencies of programed instructional techniques have derived from a lack of creativity in application, rather than from the inherent nature of the techniques. To test this hypothesis, an evaluation was made of the Achievement Competence Training instructional materials which were used in the 5th grade of a number of schools in the Philadelphia area. The following features were built into these materials: 1) they used music, art, and humor; 2) they required interaction with other learners; 3) they presented a variety of activities; 4) they permitted the learner to report and manipulate self-data; and 5) they provided open ended learning activities. An evaluation of the Achievement Competence Training program showed that programed instruction could be interesting and enjoyable, that it could promote content mastery, and that it could foster positive attitudes by the learner toward himself and his environment. In short, programed instruction can be humanizing if properly applied. (Author/PB)

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TITLE: PUTTING PIZZAZZ IN PROGRAMED INSTRUCTION

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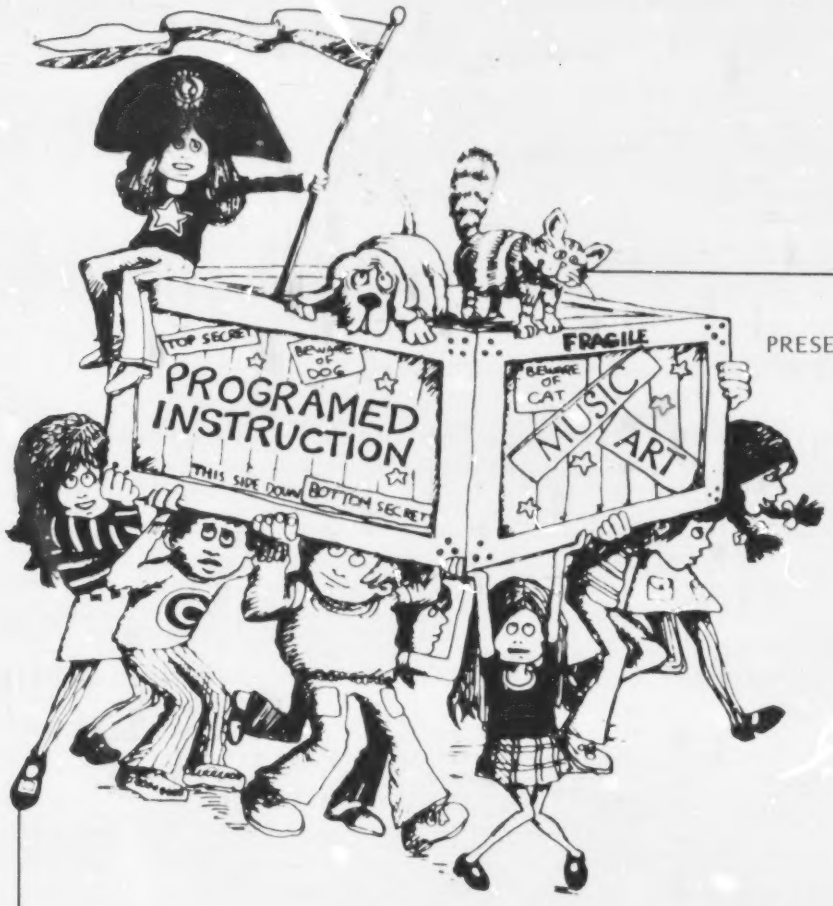

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ABSTRACT

Programed instructional techniques have been attacked as dehumanizing, dull, and cripplingly restrictive. In response, this paper maintains that the deficiencies of programed instructional techniques derive from a lack of creativity in application rather than from the inherent nature of the techniques.

Five specific modes of enhancing programed instruction are described and illustrated. They are: (1) using music, art, and humor, (2) requiring interaction with other learners, (3) using varied activities, (4) requesting the learner to report and manipulate self-data, and (5) giving opportunity for instructional open-ended action. Data concerning the appeal and/or instructional effectiveness of each mode are presented.

Presented at American Educational Research Association annual meeting, 1974.

IR 000 400

". . . only humans can be humanizing . . ."

CRITICISMS OF PROGRAMED INSTRUCTION

Programed instructional (PI) techniques are of low estate. They have been widely attacked as dehumanizing, dull, ineffective, restrictive, and boring. They have fallen from the pinnacle of educational panacea to the equally extreme position of being an example of technology's dehumanizing effect upon individuals. Consider the following:

". . . we would like to point out a few arguments in favor of books over programs. . .a book can be enjoyable, a program never can. As soon as the novelty wears off, it is an incredibly tedious procedure." (Chambers and Schulte, 1964)

". . . to the extent that programmed instruction is incorporated in the classroom schedule, the possibility of social interaction is removed." (Chambers and Schulte, 1964)

"The discontinuity of the programming method has led many programmers to forget the place of style in teaching." (Caulfield, 1963)

"The outstanding disadvantage to the teacher is the impersonal nature of self-instructional devices. . .For the student the main disadvantage indicated was the perceived narrow, shallow, mechanical or unintellectual nature of self-instructional devices." (Feldhusen, 1961)

"The biggest factor contributing to the lack of teacher acceptance of programmed learning is the rigidity and unimaginativeness of the programmed materials themselves." (Frey, 1965)

PUTTING PIZZAZZ IN PROGRAMED INSTRUCTION

"PI can be great . . ."

It need not be so! Programed instruction need not be dull. Although negative aspects may well exist in many applications of programed instruction, these aspects arise from the limited and unimaginative application of programed techniques that have been used to date. This paper argues and illustrates that programing techniques, when imaginative, can be humanizing.

The following pages present five modes for enhancing the appeal and effectiveness of programed instruction. Illustrations for each mode are provided from the Achievement Competence Training (ACT) instructional materials. Data concerning the appeal and/or instructional effectiveness of each of the techniques are also presented.

DATA SOURCE

The data used in this presentation were gathered in the field test and evaluation of ACT during the 1972-73 school year. (Brandes, 1974.) Each sample used for the evaluation consisted of three or more fifth-grade classes drawn from thirty-two elementary schools in the Philadelphia area. In all, over one hundred classes and over three thousand children were involved. The evaluation compared a group using ACT with a group using a somewhat similar curriculum (Curriculum X), and with a no-treatment control group. The groups tested were equal in IQ and test anxiety.

SUPPORTING DATA INCLUDED

The data used to support the thesis of this paper include the following:

Teacher Reports – taken from reaction forms filled out by the teachers for each lesson giving their and the children's judgments and evaluation (Campiglia, et al, 1974); and observations and anecdotes (Beckingham et al, 1974) collected during the evaluation.

Children's Reactions – taken from structured interviews conducted after completion of the program (Beckingham et al, 1974).

Journal Performance – Results of children's performance on selected journal pages within the lesson (Campiglia et al, 1974).

Lesson Test Data – Pre- and post test results of each lesson (Campiglia et al, 1974).

Mastery Test Data – taken from a measure of content mastery given at completion of the program (Brandes, 1974).

Behavioral Test Data – taken from measures of content transfer in behavioral test situations given after completion of the program (Brandes, 1974).

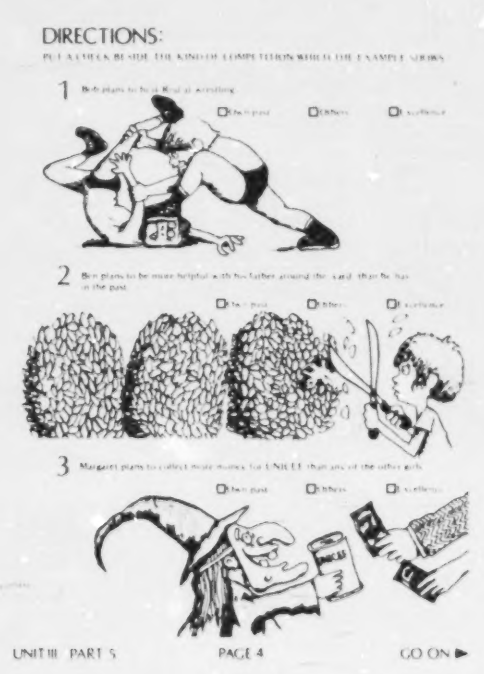
Field Test Results – taken from measures of skills, conceptualization and/or affective changes given after completion of the program (Brandes, 1974).

ENHANCING MODE NO.1: USE OF MUSIC, ART, AND HUMOR

The formats of television shows such as Sesame Street and The Electric Company should leave no doubt in mind regarding the ability of music, art, and humor to increase interest, positive affect, and instructional effectiveness for children. Then why not apply these elements to PI? It would seem that PI people have trained themselves to be dry, spare, humorless technicians relentlessly pursuing behavioral objectives. They have focused upon the linear elegance of the technique and neglected art utilized in other methods of instruction. Why? Why not use music, art, and humor to make programed instructional materials more effective?

MUSIC. Music can make associations, set scenes, create moods, and provide background for activities. Listen to the following selection which has been used to underscore a meditative exercise in ACT.

ART. Visuals not only serve to create interest and decorate; they are also useful. Messages can be carried by a good drawing (or filmstrip) in a manner which is eye-catching, easy to understand, and easy to remember. Below are examples of visuals used in the ACT program to give practice in discriminating three kinds of competition.



HUMOR. Above all, humor coupled with good showmanship can be very effective. Laughing, goosebumps, and light absurdity are not antithetical to learning, and they certainly are human. Then why not use the drama and whimsey so loved by children? And since audio tape is the medium, why not utilize the radio skills of yesterday that created Inner Sanctum's creaking door and the hum of the Green Hornet? One of the most popular segments of the ACT course is Slice of Life, a whimsical parody of radio soap operas.

THE EFFECTIVENESS OF MUSIC, ART, AND HUMOR

Teachers' reports and children's reactions along with lesson test data show that the use of music, art, and humor in the materials creates and maintains positive affect and continuing attention to the points of the lesson.

TEACHER REPORTS – a representative selection

- MUSIC

  Music relaxed children.
  The music raised their enthusiasm.
  The music is highly motivating.
  The music helped to produce a mood of quiet enjoyment.
  Music does not push them – helps them think.

- ART

  They liked the pictures on pages 4-5.
  Drawings really helped your ysters to enjoy lesson.
  They enjoyed the illustrations, especially the competing with yourself and on page 4.
  Illustrations were particularly intriguing to students.

- HUMOR

  The Slice of Life was warmly and wholeheartedly entered into.
  Students reacted very positively to soap opera parody.
  They found Slice of Life humorous and enjoyable.
  They enjoyed the humor of the soap opera script.
  Loved the format of soap opera. Thought it was hilarious.

SLICE of LIFE

The never-ending saga of real-life kids in real-life situations.

While the children listen to the audio tape they look at the picture above.

CHILDREN'S REACTIONS – a representative selection

Question: Wh[illegible]did you like best about the program?

Answers:

"Slice of Life."
"I liked brainstorming, and the Slice of Life was good."
"Slice of Life was very funny."
"Slice of Life, games."

LESSON TEST DATA

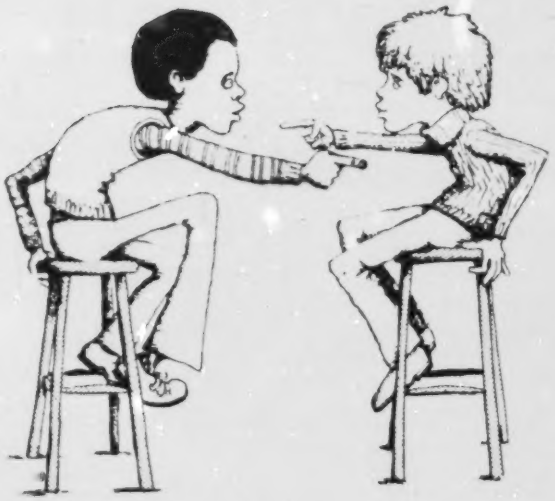
The instructional effectiveness of the visuals for the kinds of competition can be measured by comparing the pre- and post test scores of a large sample of students.

Average number of correct identifications of kinds of competition out of a possible four:

Pretest .098 Post test 3.1

Percentage of students who correctly identified four out of four test items calling for discrimination of the three kinds of competition: 73%

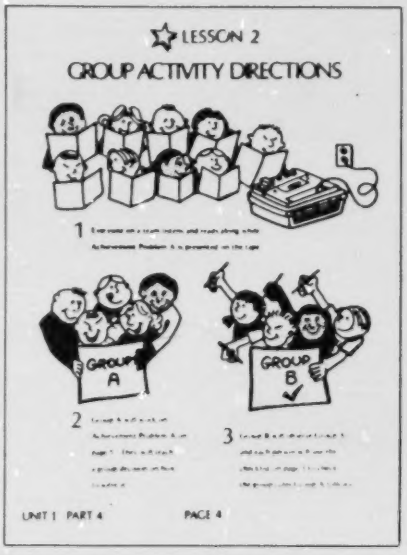
ENHANCING MODE NO. 2: LEARNER INTERACTION

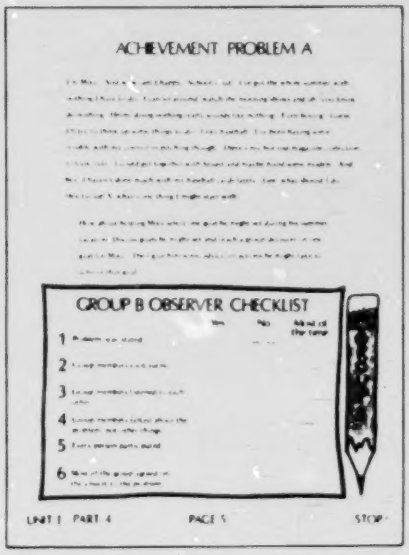


Why must most PI be oriented toward the solitary individual? Why must the learner be isolated with his program? There seems to be no good reason. PI can be so constructed that children are directed and encouraged to work in dyads and groups. Such programed interaction involves the participants and allows them to assume responsibility for their own activities and learning to a greater degree. It gives the learners a chance to share their ideas and feelings, and exposes them to each other's thinking. Examples of programed instruction interaction from ACT pages are presented below.

RULES FOR WORKING IN GROUPS

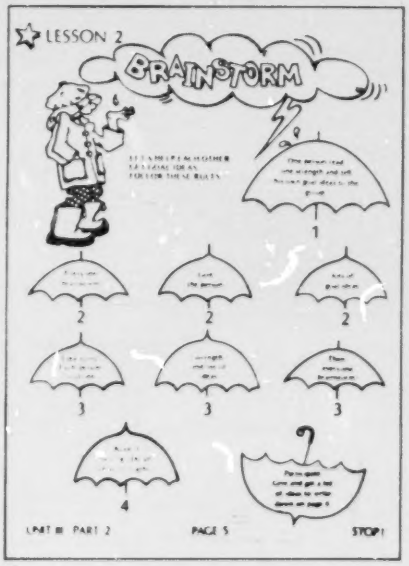
These pages are directions for a lesson in which the children learn to identify and use procedures for group behavior. They follow programed instructions and actively participate in a "fish-bowl" activity which calls for Group A to observe Group B solving a problem and vice versa. The skills programed here are utilized by the children throughout the course.

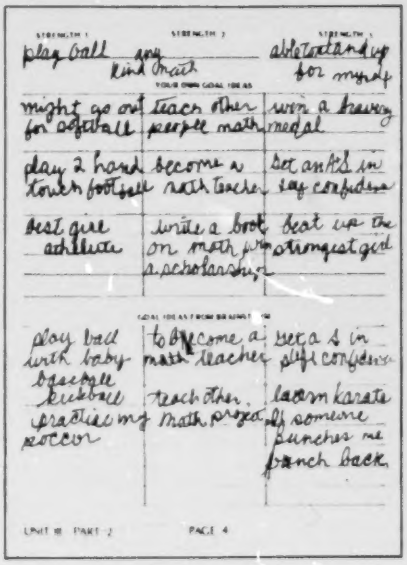




BRAINSTORMING

In this activity the children generate ideas for personal goals based on their strengths. Working in groups of four or five, they first share the ideas they have come up with and in turn receive ideas from the other members of the group. One page shows the programed directions; the other contains one child's goal idea production.




play ball
good in math
able to stand up for myself
might go out for softball
teach other people math
win a heavy medal
play 2 hard to be a football
become a math teacher
get an A in my class
best girl athlete
write a book on math
beat up the strongest girl
play ball with baby
to become a math teacher
get a A in my class
learn karate
UNIT III PART 2
PAGE 4

THE EFFECTIVENESS OF LEARNER INTERACTION

The teacher reports below, along with systematic interviews, random anecdotes and observations, indicate that programed group interaction not only works but is liked. The lesson test data show that the programing is also effective in meeting instructional objectives.

TEACHER REPORTS – a representative selection

- Rules for Working in Groups

  For once the children liked working in a group.
  Liked it so much they wanted to go on to lesson 3 (further group activity) immediately.
  Children liked getting into groups. They also liked observing one another.
  It was amazing to see how well some groups could follow the rules.

- Brainstorming

  Shared well–enjoyed group work.
  Everyone participated well – even my very shy children.
  The children really opened up with each other.
  There was a positive atmosphere throughout the class.
  I was surprised that some of the children would offer good sensible ideas.
  Kids liked the total freedom and flow of ideas.
  The brainstorming gave many ideas that they never would have thought of.
  Helped stimulate imagination!
  Group activities are productive, group skills are improving.

LESSON TEST DATA

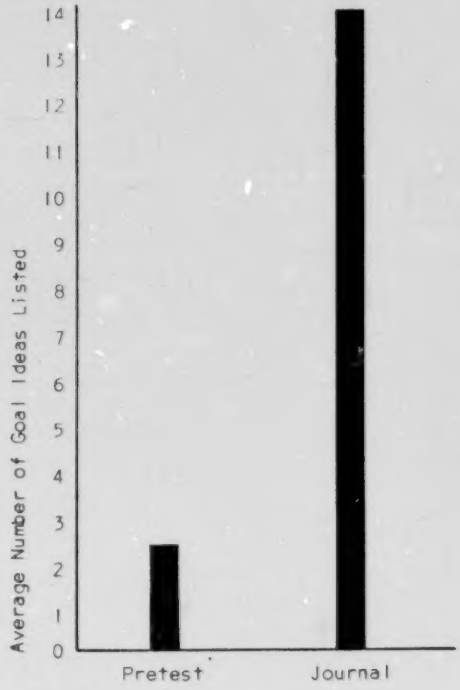
- Group Rules

  In the pre- and post test for the lesson teaching group rules, the children listen to audio tape scenes which dramatize each of the six rules. Then they are asked to identify each of the scenes. The results below are the average number of rules correctly identified out of a possible six.

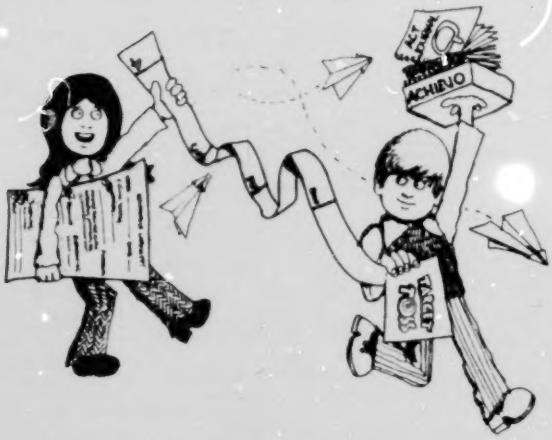
  Pretest 2.6 Post test 4.9

- Brainstorming

  The bar graph shows an increase of more than ten items in the average number of goal ideas produced by children from pre-instruction to post instruction, when presented with the task of generating goal ideas.



ENHANCING MODE NO. 3: USING VARIED ACTIVITIES



Why must a learner be physically inert when using programed instructional materials? Yes, the learner moves his eyes and his pencil, but in most cases that is the limit of his activity. Any elementary school teacher will report that a lack of activity often leads to inattention and discipline problems. So, why not program assorted activities in the PI mode?

The writers for the ACT program made it a rule to have, in every three 20-minute lessons, at least one nonwriting activity. The activities require big muscle actions where possible and include puzzles, interviews, board games, contests, creating charts and pictures, making objects, and brainstorming, to name only a few.

These ACT journal pages only hint at the variety and richness of activities programed into the course.

THE EFFECTIVENESS OF USING VARIED ACTIVITIES

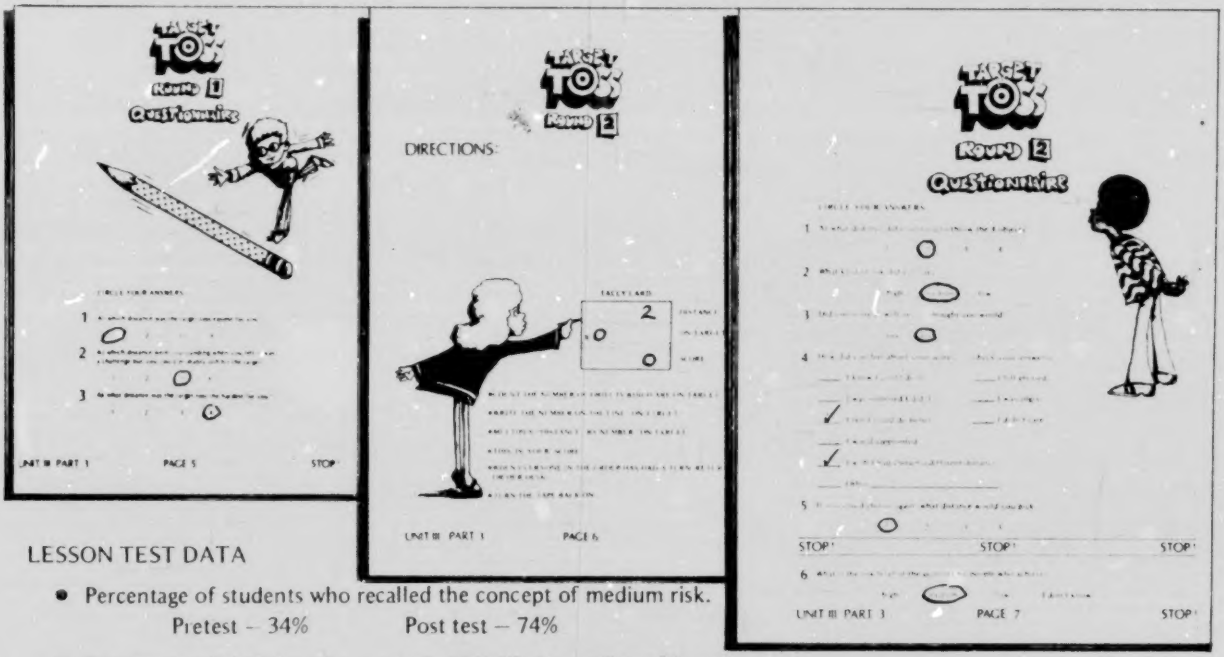
Are such activities effective? Again, teacher reports together with observation data seem to indicate that they succeed from an affective point of view. Although we cannot say that they are necessary for learning, we do have indications that they are effective. As an example we offer evidence from Target Toss, a game used to teach medium risk. The journal performance and the test data below show that the children seem to learn the concept of medium risk in a transfer situation. The evidence indicates that children learned to use this behavior and transferred it to their situations.

TEACHER REPORTS – a representative selection

- Students loved the Target Toss game. It was a good approach to the lesson.
- I thought it was an excellent way to develop concept of risk.
- The game was an excellent way of teaching risk.
- Target Toss helped to establish concept of risk.
- It demonstrated better than anything else what was medium risk.

JOURNAL PERFORMANCE

- An inspection of the students' journal pages showed that most reported changing their ideas about personal risk levels. Below is one example of such a change.



LESSON TEST DATA

- Percentage of students who recalled the concept of medium risk.
  Pretest – 34% Post test – 74%
- Percentage of students who correctly identified a medium risk goal.
  Pretest – 51% Post test – 72%
- Percentage of students who rewrote two or more personal goal statements to make them medium risk – 70%.

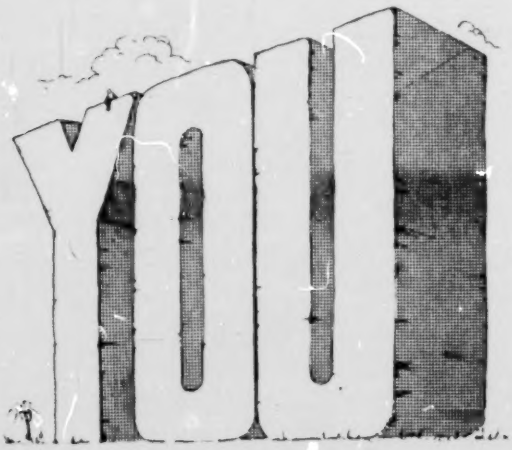
MASTERY TEST DATA

- The mastery test was given after the students completed the course. In the test 77.7% of the students received 80% or more of the possible points for items which measured goal setting skills, including medium risk.

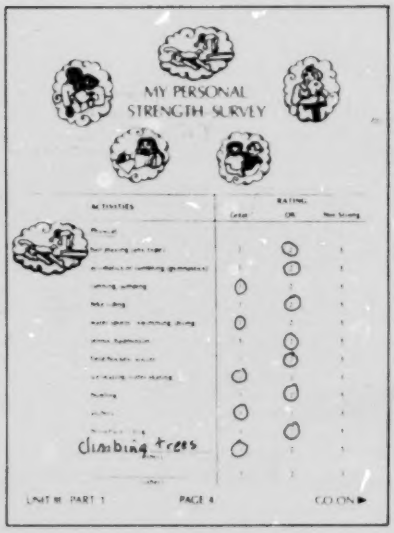
BEHAVIORAL TEST DATA

- When compared with the two comparison groups, ACT students in two behavioral test situations tended to set more realistic standards for personal achievement. Their standard discrepancy scores were significantly lower than the other groups. ($F.\ 57\ p < .05, + 1.7922 < .01$)

ENHANCING MODE NO. 4: REPORTING AND MANIPULATING SELF-DATA

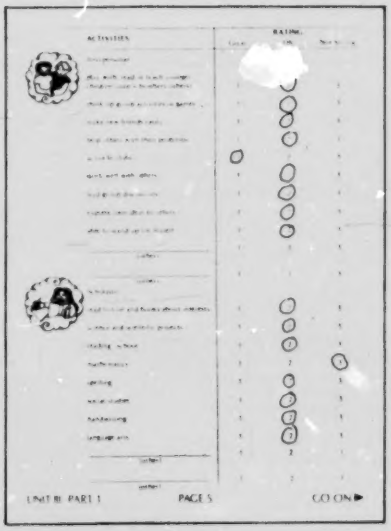


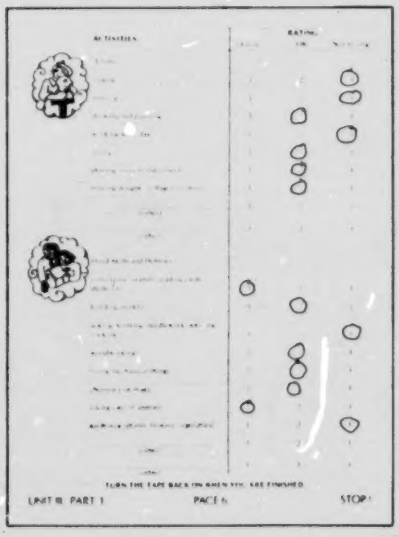
One way to make PI materials more personal and humanistic is to ask the learners to report and manipulate data about themselves as a response within the program. This can range from a simple inquiry about how the learner is feeling to a complex analysis of personally held values. Manipulating data about one's self seems to be a sure way to increase positive affect and engage interest. The two activities below illustrate how self-data can be incorporated into the PI format.



STRENGTH SURVEY

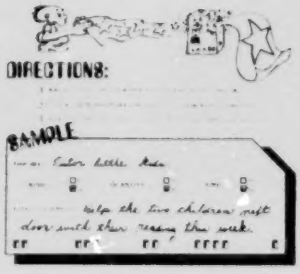
In this activity the learners were asked to make judgments about their own strengths and then summarize the data on a questionnaire (shown opposite).





MAKING GOALS SPECIFIC

In this activity the children convert personal goal ideas to specific goal statements. They take ideas for things they really might wish to achieve and, in light of their own particular situation, create goal statements which are specific in kind, quantity, and time.



TEACHER REPORTS – a representative selection

- Strength Survey

  One boy said that it really helps you know yourself.

  Most children viewed themselves quite positively.

  Children enjoyed the lesson. They said that they never thought about their strengths.

  Children were amazed at the strengths they had.

  The children...seemed to gain some new understandings about themselves.

- Making Goals Specific

  Needed no help from me at all. Wanted to do it on their own and they did.

  Children seemed more sure of themselves and happy that they now can write specific goal statements.

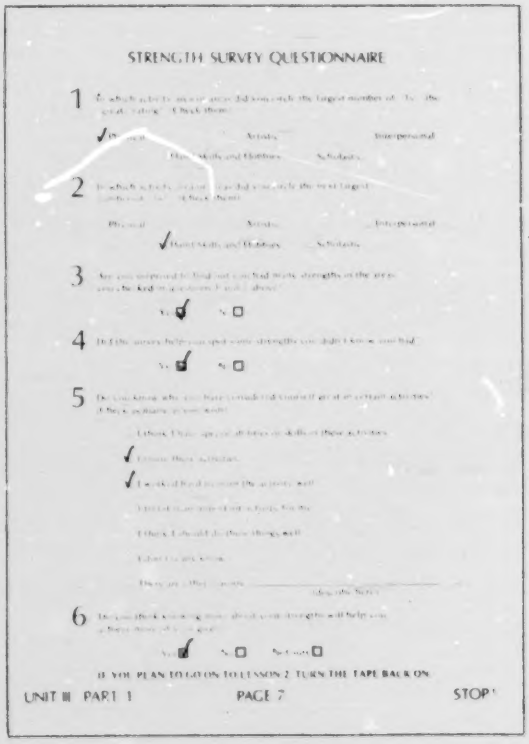
  Mine are very confident with KQT (Kind, Quantity, and Time).

  Children seemed to feel quite successful.

JOURNAL PERFORMANCE

- Strength Survey

  The survey Questionnaire shown here is the student's summary of his Strength Survey. The survey is shown on the opposite page.



STRENGTH SURVEY QUESTIONNAIRE

1

2

3

4

5

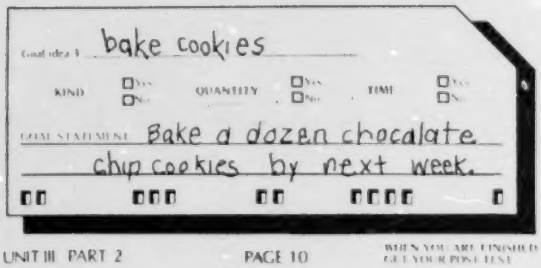
6

IF YOU PLAN TO GO ON TO LESSON 2 TURN THE TAPE BACK ON

UNIT III PART 1 PAGE 7 STOP!

- Making Goals Specific

  The accompanying illustration shows how one student took a self-set goal idea, examined it for the presence of the three limits of specificity–kind, quantity, and time–then added the missing limits to create a specific good statement.



UNIT III PART 2 PAGE 10 WHEN YOU ARE FINISHED GET YOUR POST TEST

MASTERY TEST DATA

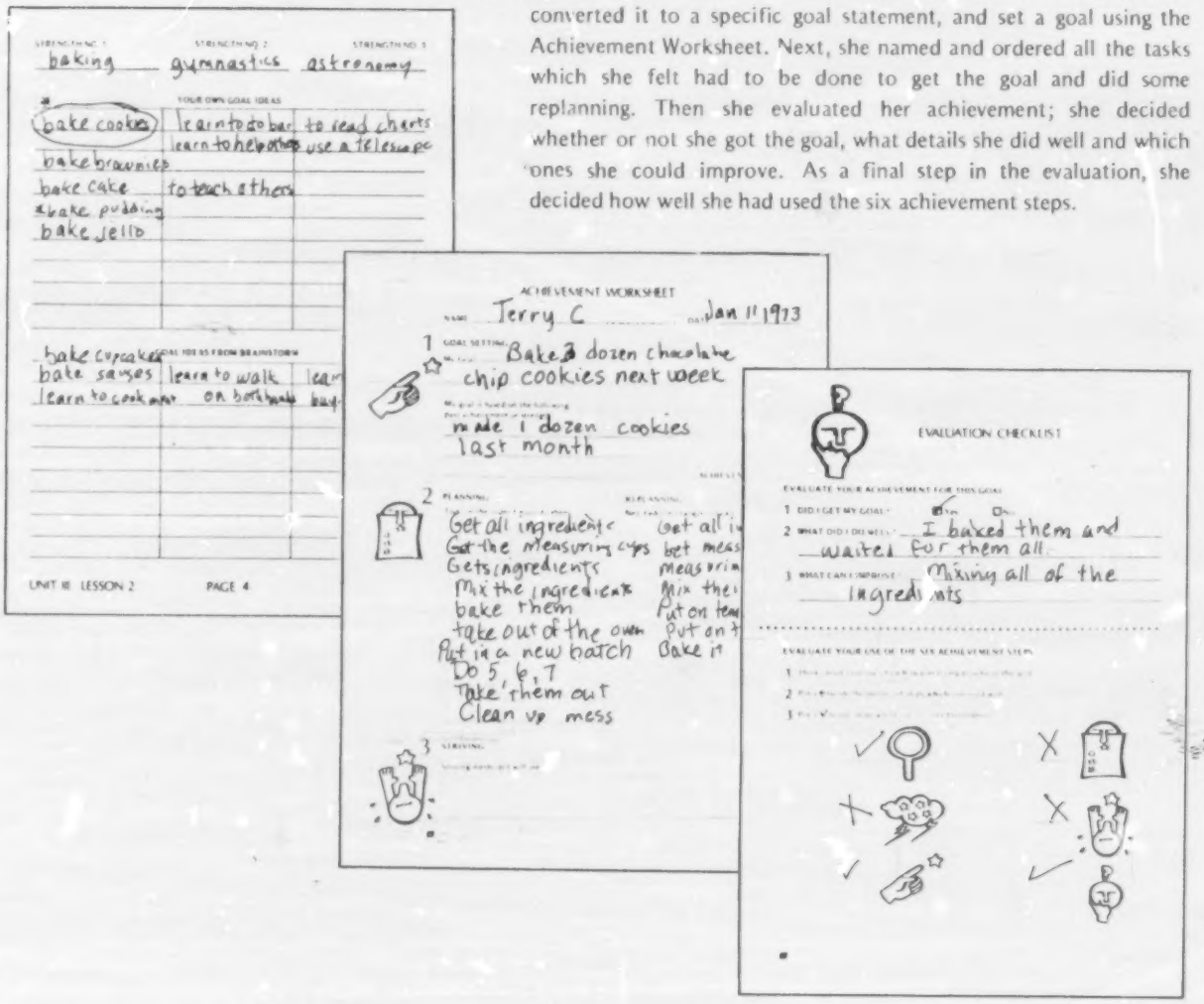
The mastery test was given after the children completed the program. In the test 77.7% of the students received 80% or more of the possible points for test items which measured goal setting skills including making goals specific.

ENHANCING MODE NO. 5: OPEN-ENDED ACTION

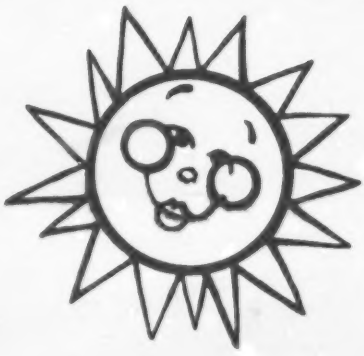
Open-ended action requires a kind of "blind" programing. That is, the program writer sets up a series of process steps that are to be followed, but leaves the specific decision concerning the content up to the learner. The key is a call for action by the program to do something that is real. Such a request engages the learner in a very powerful manner. Suddenly the instructional materials are not just an abstract exercise or a simulation. Suddenly the instructional materials become instrumental in the life of the student.

The ACT materials teach a six-step strategy of achievement which makes such "blind" programing possible. Learners are given opportunities to use the process by setting, shaping, and evaluating self-selected goals. The main instructional device in this mode is the Achievement Worksheet which is introduced during the ACT lessons. The worksheet helps the learner formalize his goal setting and striving activities.

In the sample below the child took her goal idea, "bake cookies," converted it to a specific goal statement, and set a goal using the Achievement Worksheet. Next, she named and ordered all the tasks which she felt had to be done to get the goal and did some replanning. Then she evaluated her achievement; she decided whether or not she got the goal, what details she did well and which ones she could improve. As a final step in the evaluation, she decided how well she had used the six achievement steps.



THE EFFECTIVENESS OF OPEN-ENDED ACTION



TEACHER REPORTS AND ANECDOTES

The children liked getting the Achievement Worksheets.

The worksheet helped guide the children toward realistic goals.

Worksheet gives meaning to personal strengths.

Had a very timely opportunity to use achievement sheets because a science notebook . . . is due.

One teacher reported that the children were constantly using the Achievement Worksheets to set their own goals for things like social studies projects, making reports, musical instruments, scouts, Christmas shopping, and kickball.

Another teacher reported using the Achievement Worksheet successfully with one of his slower students. Using the worksheet as a focus, the teacher talked with the boy helping him to set and plan goals.

One teacher designed a sheet of her own. The sheet had areas where the children could specify their own goals for the week. The form also contained space for planning and evaluating.

FIELD TEST EVALUATION RESULTS

- The Summer Camp Test is a multiple choice test which assesses the child's disposition to apply concepts of self-direction as taught in ACT. Although masked by different language, many of the items were directly parallel to the strategy steps. The test was administered to the total sample. The ACT group exceeded both the "curriculum X" treatment group, ($p<.05$) and the no-treatment control group ($p<.01$). We can conclude that there was a cognitive disposition to use the ACT strategy in prescribing solutions to problems.

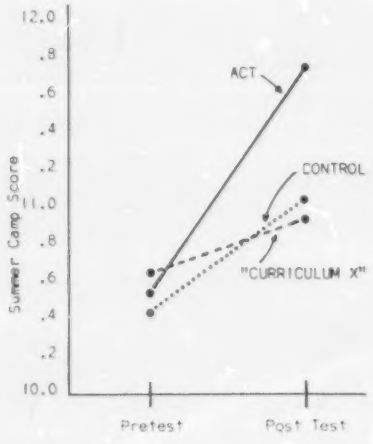


Figure 8. Mean scores on summer camp test

The Bialer Children's Locus of Control Scale is an inventory on which the child reports his perception of control over his life experiences. The scale was administered to the total sample. The ACT group exceeded both the "curriculum X" treatment group ($p<.05$) and the no-treatment control group ($p<.01$). We can conclude that there was an increase in belief in internal control on the part of the students who participated in the ACT program.

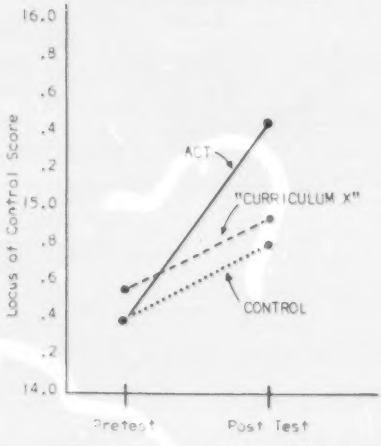


Figure 7. Mean scores on focus of control

CONCLUSION

Programed instruction enhanced by imaginative communication and instructional techniques such as popular art forms, group interaction, varied activities, self-data inputs, and open-ended processes—

Can be fun, interesting, and engaging,

Can bring learners to (and may carry them beyond) expected criteria levels of content mastery,

Can increase the positive affect of the learner toward himself and his relationship with his environment.

IN SHORT, PROGRAMMED INSTRUCTIONAL TECHNIQUES CAN BE HUMANIZING IN THE FULLEST SENSE OF THE CONCEPT.

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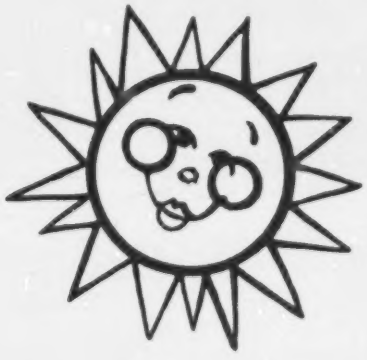

The Achievement Competence Training Materials were created and developed by Russell A. Hill in association with Marian L. Chapman, researcher and writer, with the assistance of Henry Campiglia, writer, Peter Beckingham, field coordinator, and Barbara J. Brandes, evaluator.

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